

**TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT
NON-DESTRUCTIVE EXAMINATION AND ASSAYING TECHNIQUES FOR
LEGACY WASTE BOX CHARACTERIZATION FOR THE S&M PROGRAM**

Identification No.: RL-DD085

Date: August 2001

Program: Surveillance and Maintenance

OPS Office/Site: Richland Operations Office/ Hanford Site

PBS No.: RL-CP01

Waste Stream: HAN02

TSD Title: N/A

Waste Management Unit (if applicable): N/A

Facility: 212-N

Priority Rating: This entry addresses the Accelerated Cleanup: Paths to Closure (ACPC) Priority:

- ☐ 1. Critical to the success of the Accelerated Cleanup: Paths to Closure (ACPC)
- ☐ 2. Provides substantial benefit to the ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
- ☒ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Non-Destructive Examination and Assaying Techniques for Legacy Waste Box Characterization for the S&M Program.

Need/Opportunity Category: *Technology need* - there is no existing or currently identified technology capable of meeting the project's need (i.e., no baseline approach has been identified).

Need Description: There are fifteen wooden boxes of suspect transuranic (TRU) waste stored at 212-N. The fifteen boxes must be characterized to determine the proper waste disposal paths.

Schedule Requirements:

Earliest Date Required: FY 2002

Latest Date Required: FY2002.

Problem Description: Fifteen wooden boxes of waste were stored in the 212-N Facility in the early 1970's. Records indicate the waste material is probably gloveboxes, glovebox equipment and glovebox waste. The records indicate the waste material contains plutonium and uranium, however, there is no record of other potential radionuclides or hazardous waste. The boxes were placed in storage when the definition of transuranic waste was 100 nCi/gm. Some of the waste may be reclassified under the current definition of transuranic waste. If the boxes cannot be classified without opening the boxes, each box will be opened, the contents size reduced and repackaged, the repackaged waste will be assayed. The waste handling will have to be performed assuming worst case conditions for personnel safety.

Benefit to the Project Baseline of Filling Need: The boxes may be sorted into low level or transuranic waste without opening the boxes using NDA and NDE techniques, thereby improving worker safety. Non-destructive examination (NDE) would also provide information on the boxes requiring repackaging (i.e., TRU waste) so that worker safety would be increased even for the boxes to be opened and repackaged,

Functional Performance Requirements: The technologies must be transportable. The technologies must provide NDE and NDA capabilities sufficient to define waste disposal path without further waste handling. The technologies must be operable on wooden boxes that range in size from 4' 9" X 8' X 4' 7" (H) to 7' 10" X 16' 10" X 15' 10" (H). It is desirable to perform the characterization of all fifteen boxes directly outside the 212-N Building in a contamination control structure (to be built).

WBS No.
1.4.03.3.1.04.05.03

TIP No.
N/A

Relevant PBS Milestone: PBS-MC-030

Justification for Need:

Technical: Characterization of waste to determine the proper waste disposal path.

Regulatory: There are no specific regulatory drivers for this need.

Environmental Safety & Health: Less waste handling will result in reduced risk of an environmental release and increased worker safety.

Cost Savings Potential (Mortgage Reduction): Rough order of magnitude (ROM) life cycle cost (LCC) savings is \$1M. LCC savings estimate is based on a ROM of \$1.8M to perform the opening of the boxes, sampling, visual inspection, radiation survey and data analysis that would be required if NDA/NDE techniques are unavailable versus a ROM of \$730K to perform NDA/NDE and dispose of fourteen of the boxes as low level waste. The fifteenth box is assumed to be transuranic waste and would require opening, characterization, dismantling and repackaging.

Cultural/Stakeholder Concerns: Less waste handling will result in reduced risk of an environmental release.

Other: None identified.

Current Baseline Technology: None for characterizing the boxes without opening and repackaging the waste.

End User: Environmental Restoration Project

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